

What I claim is:

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1. A cleaning apparatus for penetrating and removing deposits from an internal wall of a kiln comprising a rotary drive unit operatively connected to a first end of a drill shaft; a drill bit suitable for drilling said deposits, attached to a second end of said drill shaft and oriented for coaxial rotation therewith; a portion of said drill shaft, intermediate said rotary drive unit and said drill bit, slidably received in a sleeve member permitting rotational and linear displacement of said drill shaft therein; and a fluid jet projecting from an outer surface of said drill shaft distal said sleeve member, said fluid jet in communication with a pressurized fluid source through said drill shaft.
2. The cleaning apparatus of claim 1 wherein said fluid communication means comprises a plenum defined by an inner wall of said sleeve member, an outer surface of said drill shaft, and first and second sealing means spaced apart and sealingly engaging said sleeve member and said outer surface.
3. The cleaning apparatus of claim 2, wherein said fluid communication means further comprises at least one fluid inlet defined between an outer wall of said sleeve and said inner wall; and at least one aperture defined between said outer surface and a chamber defined internal said drill shaft, said chamber in fluid communication with said fluid jet.
4. The cleaning apparatus of claim 2 wherein said first sealing means is positioned proximal said first end of said drill shaft, and said second sealing means is positioned proximal said second end of said drill shaft.
5. The cleaning apparatus of claim 2 wherein said first sealing means is attached at a first end of said sleeve member, and said second sealing means is attached at a second end of said sleeve member.
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6. The cleaning apparatus of claim 1 wherein said fluid jet comprises a fluted venturi aperture comprising: a flared inlet portion, a tapered outlet portion, and a constricted throat portion interposed there-between; said flared inlet portion having an inlet diameter greater than an outlet diameter of said tapered outlet portion; and said flared inlet portion having a length substantially shorter than a length of said tapered outlet portion.

7. The cleaning apparatus of claim 6 wherein said fluid jet further comprises a stylus, said stylus comprising a bulbous base portion and a tapered end portion extending axially therefrom, said stylus interposed within said fluted venturi aperture with said bulbous portion juxtaposed said constricted throat portion and said tapered end portion extending therefrom into said tapered outlet portion.

8. The cleaning apparatus of claim 7 wherein said fluted venturi aperture is received in a first bore extending from an outer wall of said drill shaft into a chamber defined internal said drill shaft, and said stylus further comprises a lug portion received in an second bore radially opposed to said first bore, said second bore extending outwardly from an inner surface of said chamber; and said chamber in fluid communication with said pressurized fluid source.

9. The cleaning apparatus of claim 8 wherein said stylus is selectively adjustable along a longitudinal axis of said fluted venturi aperture to impart a desired flow pattern to said pressurized fluid.

10. The cleaning apparatus of claim 1 wherein said drill shaft is selectively extensible between a retracted position, wherein said drill bit is displaced proximal said sleeve, and an extended position, wherein said drill bit displaced distal said sleeve.

11. The cleaning apparatus of claim 10 further comprising actuator means for selectively positioning said drill shaft between said retracted and extended positions.

12. The cleaning apparatus of claim 11 wherein said fluid communication means are continuously maintained between said retracted and extended positions.

13. The cleaning apparatus of claim 11 wherein said actuator means comprise a linear actuator operatively affixed between said first end of said drill shaft and said second end of said drill shaft.

14. The cleaning apparatus of claim 13 wherein said actuator means further comprise guide means, said guide means comprising a guide rod slidably received in at least one guide loop extending from and attached to an outer surface of said sleeve member.

15. The cleaning apparatus of claim 1 wherein said kiln is provided with an access port extending from an outer wall of said kiln to said internal kiln wall and said sleeve member further comprises an adapter housing extending from an end of said sleeve member proximal said drill bit, and attachment means connecting said adapter housing to said access port.

16. In a kiln having a plurality of ports therein for cleaning material deposits from interior walls thereof, an improved apparatus for penetrating said deposits and cleaning said deposits from said interior walls comprising: a drill shaft; a drill bit suitable for drilling said deposits coaxial with and driven by said drill shaft; and at least one fluid jet adjacent said drill bit selectively projecting a pressurized fluid stream communicated through said drill shaft and projecting laterally therefrom.

17. The apparatus of claim 16 further comprising a sleeve member sealingly receiving a portion of said drill shaft defining a plenum between said sleeve member and said drill shaft, said plenum in fluid communication with said fluid jet.

18. The apparatus of claim 17 further comprising at least one fluid inlet defined in said sleeve member in fluid communication with said plenum; said plenum in fluid communication with at

least one aperture defined in said rotary drill shaft; said aperture in fluid communication with a chamber defined internal said rotary drill shaft; and said chamber in fluid communication with fluid jet.

19 21. The apparatus of claim 16 further comprising means for urging said drill bit against a build up of said deposits wherein said drill bit presses said build up of said deposits from said port, said means for urging comprising a linear actuator operatively connected to said rotary drill shaft.

20 22. The apparatus of claim 19 further comprising guide means for maintaining alignment of said drill shaft and drill bit relative said port.

21 23. The apparatus of claim 16 wherein said drill bit comprises a plurality of radially extending fingers and at least one cutting surface on each said radially extending finger.

22 24. The apparatus of claim 19 wherein said drill bit further comprises a pilot bit coaxial said rotary drill shaft, said pilot bit having a diameter substantially smaller than a diameter circumscribed about said radially extending fingers, said pilot bit extending beyond said at least one cutting surface of each said radially extending finger.

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